

CLAIMS

What is claimed is:

1. A method for forming an image, the method comprising the steps of:

5 a) thermally imaging a multi-layer imageable element and forming an imaged imageable element comprising imaged and complementary unimaged regions;

wherein:

imaging is carried out using stochastic screening;

10 the imageable element comprises a substrate, an underlayer over the substrate, and a top layer over the underlayer;

the element comprises a photothermal conversion material;

the top layer is substantially free of the photothermal conversion material;

the top layer is ink receptive;

15 before thermal imaging, the top layer is not removable by an alkaline developer;

after thermal imaging, the imaged regions are removable by the developer; and

the underlayer is removable by the developer; and

20 b) developing the imaged imageable element with the developer and removing the imaged regions without substantially affecting the unimaged regions;

wherein:

the developer is a solvent based developer;

25 the developer has a pH below about 10.5; and

a replenisher is added to the developer; and

the volume of replenisher added to the developer is about 80 ml/m² to about 400 ml/m² of imaged element developed in the developer.

2. The method of claim 1 in which the replenisher has the same composition as the developer.

5 3. The method of claim 1 in which the developer is sprayed onto the imaged imageable element during step b).

4. The method of claim 1 the volume of replenisher added to the developer is about 100 ml/m² to about 300 ml/m² of imaged element developed in the developer.

10 5. The method of claim 4 in which the replenisher has the same composition as the developer.

6. The method of claim 5 in which the developer has a pH below about 10.2.

15 7. The method of claim 4 in which the developer has a pH below about 10.2.

8. The method of claim 7 in which the developer comprises phenoxyethanol.

9. The method of claim 8 in which the top layer comprises a novolac resin and a dissolution inhibitor.

20 10. The method of claim 9 in which the underlayer comprises a copolymer of N-phenylmaleimide, methacrylamide, and methacrylic acid.

11. The method of claim 10 in which the developer is sprayed onto the imaged imageable element during step b); the processing speed is about 0.76 m/min to about 1.2 m/min; and the temperature of the developer is about 25 20°C to about 25°C.

12. The method of claim 11 in which the replenisher has the same composition as the developer.

13. The method of claim 1 in which the top layer comprises a novolac

resin and a dissolution inhibitor.

14. The method of claim 13 in which the underlayer comprises a copolymer of N-phenylmaleimide, methacrylamide, and methacrylic acid.

15. The method of claim 14 in which:

5 the developer is sprayed onto the imaged imageable element during step b);

the volume of replenisher added to the developer is about 100 ml to about 300 ml/m² of imaged element developed in the developer;

the developer has a pH below about 10.2, and

10 the developer comprises phenoxyethanol.

16. The method of claim 15 in which the replenisher has the same composition as the developer.

17. A method for forming an image, the method comprising the steps of:

15 a) thermally imaging a multi-layer imageable element and forming an imaged imageable element comprising imaged and complementary unimaged regions;

wherein:

imaging is carried out using stochastic screening;

20 the imageable element comprises a substrate, an underlayer over the substrate, and a top layer over the underlayer;

the element comprises a photothermal conversion material;

the top layer is substantially free of the photothermal conversion material;

the top layer is ink receptive;

25 before thermal imaging, the top layer is not removable by an alkaline developer;

after thermal imaging, the imaged regions are removable by the developer; and

the underlayer is removable by the developer; and

- b) developing the imaged imageable element with the developer and
5 removing the imaged regions without substantially affecting the unimaged regions;

wherein:

the developer is a solvent based developer;

the developer has a pH below about 10.5; and

- 10 a replenisher is added to the developer; and

the volume of replenisher added to the developer per square meter of imaged element developed is equal to about 0.1% to about 1.5% of the volume of the developer.

18. The method of claim 17 in which the developer is sprayed onto the
15 imaged imageable element during step b).

19. The method of claim 18 in which the developer has a pH below about 10.2, and the developer comprises phenoxyethanol.

20. The method of claim 19 in which the volume of replenisher added to the developer per square meter of imaged element developed is equal to
20 about 0.25% to about 1.5% of the volume of the developer.

21. The method of claim 20 in which the top layer comprises a novolac resin and a dissolution inhibitor; and the underlayer comprises a copolymer of N-phenylmaleimide, methacrylamide, and methacrylic acid.

22. The method of claim 21 in which the processing speed is about
25 0.76 m/min to about 1.2 m/min; and the temperature of the developer is about 20°C to about 25°C.

23. The method of claim 22 in which the replenisher has the same

composition as the developer.

24. The method of claim 17 in which the volume of replenisher added to the developer per square meter of imaged element developed is equal to about 0.25% to about 1.5% of the volume of the developer.

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